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(54) **Apparatus for temporarily immobilizing a local area of tissue**

(57) The invention is apparatus for performing beating heart surgery, in which a single articulating arm supports multiple suction pods. Once the suction pods are applied to the heart surface, tightening a cable fixes the arm in place. Then, the suction pods may be spread apart from each other to tighten the surface of the cardiac tissue lying between the suction pods. In one embodiment, fixation of the arm as well as the spreading apart of the suction pods may occur concurrently or almost concurrently through the tensioning of a single cable. Additional embodiments of the method, system and its components are shown.

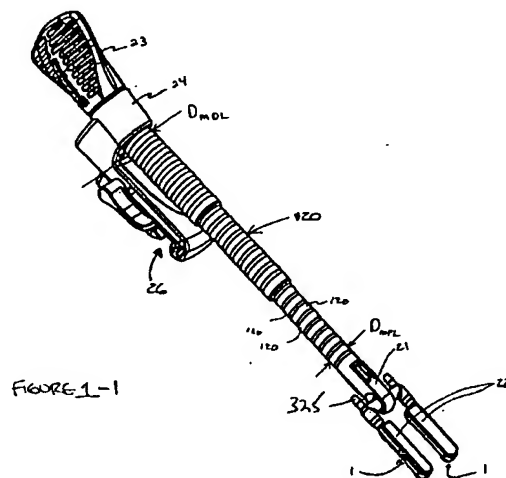


FIGURE 1-1

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## EUROPEAN SEARCH REPORT

Application Number  
EP 99 30 7331

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Y	* column 37; figures 10B,30,42,65 *	63-67, 94,96	
A	* figures 33,75 *	29	
A	* figure 32C *	14	
X	* figure 32B *	12,57,58	
X	* figure 32C *	13,59	
X	* figure 60 *		
X	* column 14, line 28 *	89,90	
A	* figures 18,44 *	93,99	
A	* figures 32,18 *	98	
X	* column 31, paragraph 2; figure 32 *	104-106	
X	DE 297 08 050 U (RIESS) 17 July 1997 (1997-07-17)	119,123, 124	TECHNICAL FIELDS SEARCHED (InCL7)
Y		94,96	
A	* figures 3,4,10 *	12-14	A61B
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	* figures 8,9 *		
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	* page 15, last paragraph; figure 16 *		
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 April 2000	Examiner Barton, S
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

**LACK OF UNITY OF INVENTION**

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 99 30 7331

DOCUMENTS CONSIDERED TO BE RELEVANT				
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. CL.7)	
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P,X	WO 99 16367 A (ALLIANCE) 8 April 1999 (1999-04-08)  * page 5, line 6 - line 9; figures 1,7,12,13 *	1,94-97, 119-121, 123		
The present search report has been drawn up for all claims				
Place of search THE HAGUE		Date of completion of the search 26 April 2000	Examiner Barton, S	
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document		T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document		

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European Patent  
OfficeLACK OF UNITY OF INVENTION  
SHEET BApplication Number  
EP 99 30 7331

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

## 1. Claims: 1-11,18-21,45,46,78,79,82-88,110,114-118

Tissue immobilising system with movable paddles, in particular with a combination of malleable conforming and suction gripping

## 2. Claims: 1,22-25

Tissue immobilising system with movable paddles, with spreading means including a spreadable saddle

## 3. Claims: 1,29,31-38

Tissue immobilising system with movable paddles, with independent spreading of first and second paddles

## 4. Claims: 1,14-17,39-44,47-52

Tissue immobilising system with movable paddles, with hinged spreading means

## 5. Claims: 1,53-56,81

Tissue immobilising system with movable paddles, with simultaneous paddle spreading and arm locking

## 6. Claims: 1,12,20,30,57,58

Tissue immobilising system with movable paddles, with parallel paddle spreading

## 7. Claims: 1,13,59-62

Tissue immobilising system with movable paddles, with non-parallel paddle spreading

## 8. Claims: 1,63-77

Tissue immobilising system with movable paddles, with multiple suction ports on a single surface

## 9. Claims: 1,80

Tissue immobilising system with movable paddles, with

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Application Number  
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CL7)
P, X	EP 0 920 835 A (ETHICON) 9 June 1999 (1999-06-09) * paragraphs '0036!', '0040!'; figures 12,13 * -----	1, 63	
			TECHNICAL FIELDS SEARCHED (Int.CL7)
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>26 April 2000</b>	Examiner <b>Barton, S</b>
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 (3.12.92) (P04/G01)

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European Patent  
Office**LACK OF UNITY OF INVENTION  
SHEET B**Application Number  
EP 99 30 7331

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

special arrangement of suction source, suction port and  
paddle and port surfaces

10. Claims: 1,89-93,99-103

Tissue immobilising system with movable paddles, with  
special construction of flexible arm

11. Claims: 1,26-28,94-98,110-113,119-126

Tissue immobilising system with movable paddles, with  
spreading actuator remote from paddles

12. Claims: 1,104-109

Tissue immobilising system with movable paddles, with paddle  
with puncturing and dispensing capability

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ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

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